

Amendment under 37 CFR § 1.111  
Serial No. 10/519,802  
Attorney Docket No. 043061

## **REMARKS**

### **Allowable Claims**

Applicant gratefully acknowledges that claims 5, 6 and 9 are allowable if the rejection under 35 USC 112, 2<sup>nd</sup> paragraph is overcome.

### **Rejections under 35 USC §112, Second Paragraph**

**Claims 1-9 were rejected under 35 USC §112, second paragraph, as being allegedly indefinite.**

Accordingly, the claims have been amended to overcome the rejection.

### **Rejections under 35 USC §102(b)**

**Claim 2 was rejected under 35 USC §102(b) as being anticipated by Meelu (U.S. Patent No. 6,299,986).**

In so doing, the Examiner alleged that Meelu teaches a refractory metal core having a barrier layer and an aluminide layer applied thereto, wherein the core and the barrier layer are comprised of rhenium and chromium.

The term “refractory metal” is defined by McGraw-Hill Dictionary of Scientific and Technical Terms 6th ed. (2003) as “a metal or alloy that is heat-resistant, having a high melting point,” which can include superalloys.

Claim 2 has been amended to “A metal-based resistance heat-generation element excellent in heat resistance and high-temperature corrosion resistance, comprising: a heat-generation element member made of an alloy containing a platinum-group metal or refractory metal, and Re and Cr diffused therein; and a coating film formed on all surfaces of said heat-generation element member, said coating including an aluminide or silicide layer.” Thus, claim 2 recites “a heat-generation element member made of an alloy containing a platinum-group metal or refractory metal, and **Re and Cr diffused therein.**”

Meelu describes its invention as follows:

Accordingly the present invention provides a method of coating a high rhenium-containing superalloy article, the superalloy article comprising more than 4 wt % rhenium, comprising the steps of:

depositing a protective coating on the high rhenium-containing superalloy article, characterised by applying a barrier coating on the high rhenium-containing superalloy article before depositing the protective coating on the high rhenium-containing superalloy article, the **barrier coating comprising an alloy having a lower rhenium content than the high rhenium-containing superalloy article** to reduce the formation of TCP phases in the high rhenium-containing superalloy article.

The depositing of the protective coating may comprise depositing an aluminide coating or a MCrAlY coating.

The depositing of the protective coating may comprise depositing an aluminide-silicide coating, a platinum aluminide-silicide coating or a platinum aluminide coating.

(Col.2, lines 39-57). Meelu further describes the specific composition as follows:

The depositing of the barrier coating may comprise depositing an alloy having a similar composition to the superalloy article. The depositing of the barrier coating may comprise depositing an alloy comprising less than 4 wt % rhenium. The alloy may comprise 9.3 to 10.0 wt % Co, 6.4-6.8 wt % Cr, 0.5-0.7 wt % Mo, 6.2-6.6 wt % W, 6.3-6.7 wt % Ta, 5.45-5.75 wt % Al, 0.8-1.2 wt % Ti, 0.07-0.12 wt % Hf, 2.8-3.2 wt % Re and balance Ni. The alloy may comprise 10 wt % Co, 9 wt % Cr, 10 wt % W, 2.5 wt % Ta, 5.5 wt % Al, 1.5 wt % Ti, 1.5 wt % Hf, 0.15 wt % C and balance Ni.

The superalloy substrate may comprise 1.5-9.0 wt % Co, 1.8-4.0 wt % Cr, 0.25-2.0 wt % Mo, 3.5-7.5 wt % W, 7.0-10.0 wt % Ta, 5.0-7.0 wt % Al, 0.1-1.2 wt % Ti, 0-0.15 wt % Hf, 5.0-7.0 wt % Re, 0-0.5 wt % Nb, 0-0.04 C and balance Ni.

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Preferably the barrier coating comprises an alloy having a similar composition to the superalloy article.

(Col. 3, lines 25-37 and 53-54). Thus, the barrier coating comprises an alloy having a lower rhenium content than the high rhenium-containing superalloy article. This cannot happen to “a heat-generation element member made of an alloy containing a platinum-group metal or refractory metal, and Re and Cr diffused therein.”

Moreover, Meelu describes about platinum as follows:

**The depositing of the protective coating may comprise depositing platinum onto the barrier coating on the high rhenium-containing superalloy article,** heat treating to diffuse the platinum into the barrier coating, simultaneously diffusing aluminium and silicon from the molten state into the barrier coating on the high rhenium-containing superalloy article.

The depositing of the protective coating may comprise depositing **platinum onto the barrier coating on the high rhenium-containing superalloy article,** heat treating to diffuse the platinum into the barrier coating, diffusing aluminium into the barrier coating on the high rhenium-containing superalloy article.

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(Col.2, line 66 to Col. 3, line 11). Here, the platinum is deposited onto the barrier coating on the high rhenium-containing superalloy article. In contrast, according to the present invention, the heat-generation element member may be made of an alloy containing a platinum-group metal but platinum is not deposited onto the barrier coating.

Thus, Meelu does not teach or suggest, among other things, “a heat-generation element member made of an alloy containing a platinum-group metal or refractory metal, and Re and Cr diffused therein.”

For at least these reasons, claim 2 patentably distinguishes over Meelu.

**Rejections under 35 USC §103(a)**

**Claims 1-4, 7 and 8 were rejected under 35 USC §103(a) as being obvious over Narita et al. (WO 03/038152).**

Narita et al WO 03/038152 was published on May 8, 2003. The international application of the present application was filed on June 30, 2003. Therefore, Narita et al is not 102(b) prior art but is 102(a) or (e) prior art.

Toshio Narita, the sole inventor of the present application is one of the inventor of Narita et al. Applicant submits herewith a declaration under 37 CFR 1.132 that he conceived or invented the subject matter disclosed in the patent or application publication and relied on in the rejection.

Therefore, the 35 USC §103(a) rejection has been overcome.

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In view of the aforementioned amendments and accompanying remarks, Applicants submit that the claims, as herein amended, are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney to arrange for an interview to expedite the disposition of this case.

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,  
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Enclosure: Declaration under 37 CFR 1.132 by the inventor

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